

## Concurrent presence of HBsAg and Anti-HBs in children

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To the Editor,

The presence of antibody (anti-HBs) against hepatitis B surface antigen (HBsAg) generally indicates the clearance of HBsAg and development of immunity to the hepatitis B virus (HBV). But, unusual serological findings, such as concurrent presence of HBsAg, anti-HBs and hepatitis B e antigen (HBeAg), are not uncommon<sup>1</sup>. This situation may be seen in one-third of patients in some reports<sup>2</sup>.

We observed three children, aged six, 11 and 13 years, with concurrent HBsAg, HBeAg and anti-HBs among 184 consecutive HBsAg carriers. Two of them were brothers. All were HBsAg carriers for more than six months. Anti-HBs titrations were below 100 mIU/ml in all. Transaminase levels were normal in two patients. The other one had fluctuating transaminase levels. Liver biopsy of this patient revealed chronic persistent hepatitis. Transaminase concentration normalized in this patient after 24 months of follow-up, following HBeAg/anti-HBe seroconversion, and remained consistently normal thereafter. HBV DNA was negative in all during concurrence of HBsAg and anti-HBs. Anti-HBs became undetectable within four months in the two brothers, and within one year in the remaining patient. Immune complexes were negative in all and no extrahepatic finding was observed due to concurrence of HBsAg and anti-HBs.

In some areas, concurrent HBsAg and anti-HBs is a common serological pattern, affecting more than 30 percent of patients<sup>2,3</sup>. In our study, it was seen in 1.6 percent of the patients. Whereas there was no difference in HBV DNA-positive status between HBsAg carriers with and without anti-HB<sup>2,3</sup>. Concurrence was more common in patients with chronic active hepatitis than in those with acute hepatitis or chronic persistent hepatitis or in asymptomatic carriers<sup>3</sup>. In contrast, our two patients were chronic asymptomatic carriers and one had chronic persistent hepatitis. It has been shown that circulating complement-fixing immune complexes play an important role in the

pathogenesis of extrahepatic symptoms, such as arthritis<sup>4</sup>. Our patients did not have extrahepatic symptoms and we could not detect circulating immune complexes. Although most patients remained positive for HBsAg and anti-HBs in other studies<sup>3</sup>, anti-HBs disappeared in all our patients.

Infection with two different subtypes and inadequate host immune response are the most likely explanations for this phenomenon<sup>1,3,5</sup>. Mutations in the S region of HBV DNA may cause immune escape mutants of HBV and may explain why first contact with HBV leads to immune tolerance and a second to an immune response<sup>6</sup>. Adoptive immunity transfer with bone marrow transplantation has been reported to be effective in clearing chronic HBV infection<sup>5</sup>. In conclusion, concurrence of HBsAg anti-HBs occurs less frequently in children and it does not have an additional risk. Additionally, the presence of anti-HBs alone does not indicate a non-infectious serum.

### REFERENCES

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